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THE IMPACT OF MERGER LEGISLATION ON BANK MERGERS

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ABSTRACT. We find that stricter merger control legislation increases abnormal announcement returns of targets in bank mergers by 7 percentage points. Analyzing potential explanations for this result, we document an increase in the pre-merger profitability of targets, a decrease in the size of acquirers and a decreasing share of transactions in which banks are acquired by other banks. Other merger properties, including the size and risk profile of targets, the geographic overlap of merging banks and the stock market response of rivals appear unaffected. The evidence suggests that the strengthening of merger control leads to more efficient and more competitive transactions.

JEL Classification: G21, G34, K21, L40

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1. INTRODUCTION

The banking sector has long been regarded as "special" in various ways. First, it is one of the most regulated sectors in the economy for reasons linked to systemic risk and consumer protection. Second, due to the strong focus on financial stability, the sector has long been exempted from any other objective or policy that may interfere with this. In particular, considerations concerning the degree of competition or the level of concentration in the sector have been historically downplayed in many countries precisely because of the fear that competition could be detrimental for financial stability.[1]

Only more recently, thanks also to the process of liberalization started in the 1970s-1980s and to findings showing a beneficial link between competition and stability,[2] the attention paid to competition considerations in banking has increased and the sector has been gradually subject to the introduction or the strengthening of competition policy in numerous countries. Despite this, special provisions in the application of competition policy to the banking sector remain pervasive and the (scarce) available research on the implementation of competition laws in practice suggests that competition concerns frequently have been overridden.[3]

Against this background, our study contributes to the debate on competition and stability in banking by empirically studying the impact of the introduction of merger control on the valuation and other characteristics of bank mergers and acquisitions. In particular, we analyze a dataset of announced bank mergers and acquisitions between 1986 and 2007 in

[1] See, for example, Keeley (1990) for an influential theory on the detrimental link between competition and stability.

[2] See, for example, Boyd and De Nicolo (2005) for a model showing a positive link between competition and stability and Beck et al. (2006) for supporting evidence.

[3] See the survey papers by Carletti (2008) and Carletti and Vives (2009) for further background on competition policy and the banking sector.

15 European countries that experienced changes in merger control legislation. We construct a comparison between transactions before and after the change in legislation, and measure differences in the characteristics of the transactions as well as of the merging parties.

Our main finding is a statistically significant and economically meaningful increase by 7 percentage points in the market premium that target stocks experience around the announcement of a merger. Analyzing the reasons behind this result, we find that after the introduction of merger control the average and relative size of the acquirer banks fell significantly, while the share of bank acquisitions by non-banks increased. Other characteristics we study, including the profitability and risk-profile of targets as well as the market response of rival banks, appear unaffected. We interpret this evidence as suggestive of an effective implementation of merger control in banking, leading to more efficient and more competitive transactions.

Our paper is linked to a number of strands of literature. Our results contribute to the literature on the effects of merger control on the market for corporate control starting with the contributions by Eckbo (1985), Eckbo and Wier (1985) and Eckbo (1992). While these papers find a limited impact of merger control in terms of preventing or deterring anti-competitive mergers, more recent results in Aktas et al. (2004), Seldeslachts et al. (2009) and Duso et al. (2011) suggest that enforcement decisions on proposed mergers tend to have a positive deterrence effect on future transactions. In line with these, we also find that transactions among banks become more efficient and more competitive after merger control is introduced, suggesting a positive and significant effect of the legislative change.

A closer contribution to ours in this literature is Duso et al. (2013), who study the reform of the EU merger regulation in 2004. They find an improvement in the predictability

of enforcement decisions by the European Commission. The reform also increased the effectiveness of decisions in preventing anti-competitive mergers, but only marginally so, in particular with respect to decisions involving remedies. Although we also analyze the effectiveness of new merger regulation, our study differs from this paper in two important respects. First, while Duso et al. (2013) focus only on one legislative change, we consider a set of changes in the merger legislations across 15 different countries occurring in the period 1989 to 2007. This allows us to study events both across time and countries. Second, while their dataset includes only mergers that were notified to the European Commission, we study a dataset of merger activity that also includes transactions that never reached the relevant competition authority. Thus, our paper provides a different and complementary perspective on the effects of legislative changes on merger activity.

Our paper is the first contribution in this literature that studies the effects of competition policy specifically on bank mergers. That the banking sector deserves special attention is for example shown in Carletti et al. (2015), who analyze the impact of merger control legislation changes on stock market valuations across different sectors at the time of the legal change. They find a negative reaction for non-financial sectors and a positive one for banks, connecting these effects to investor expectations about future merger activities. In our paper, we study how the merger legislation changes affects realized bank mergers. This allows us to study the effectiveness of merger control in the banking sector in terms of the dynamics and the characteristics of the actual transactions.

Our paper also contributes to the existing research on mergers in the banking sector, focusing on implications for shareholders as well as customers. For example, Becher (2000) studies bank mergers during the 1990s and observes strong gains on announcement

for target shareholders as well as gains for the combined entity, suggesting that mergers take place for synergistic reasons, rather than empire building. Similarly, our paper demonstrates the positive gains for target shareholders and in addition uncovers how these premia change with the legislation regime.

Finally, there are a number of papers studying the implications of mergers for bank customers. Sapienza (2002) shows that acquisitions of small banks by larger banks tend to benefit the customers of the target banks through lower interest rates, whilst customers of a large acquisition target tend to lose. Focarelli and Panetta (2003) find that in the long term bank customers benefit from efficiency gains of transactions. Panetta et al. (2009) show that mergers improve the extent to which banks are able to recognize high risk borrowers. Erel (2011) finds that bank mergers during the 1990s on average led to an improvement of loan conditions for customers.[4] Differently from these papers, our study is the first to analyze the effect of changes in merger control legislation on the characteristics of bank mergers using a large sample of concluded transactions in different European countries.

The remainder of this paper is structured as follows. Section 2 describes the dataset of bank mergers and merger control legislation changes studied in this paper. Section 3 introduces merger announcement effects. The main analysis is presented in Section 4, which studies the impact that the introduction of new merger control legislation has on bank merger activity. Section 5 concludes.

[4] Other papers studying the impact of bank mergers on loans to firms include Berger et al. (1998), Scott and Dunkelberg (2003), Karceski et al. (2005), Bonaccorsi Di Patti and Gobbi (2007) and Degryse et al. (2010).

2. DATA

We analyze the impact of merger control on merger activity using a dataset assembled from three sources. First, information on bank mergers is extracted from the SDC Platinum Mergers and Acquisitions database. Second, the targets and acquirers in these transactions are matched with Datastream to extract stock market returns. Third, data on merger legislation changes are taken from Carletti et al. (2015). Table 1 presents an overview of the data sources, variables and definitions.

SDC Platinum Mergers and Acquisitions provides data for more than 900,000 transactions worldwide starting since the 1970s. The database lists the identity of merging parties and financial information as well as characteristics of the transaction itself. We work with a sample of transactions announced between 1 January 1986 and 31 December 2007 and involving a European bank as target.[5] We then match merging parties listed in SDC with Datastream identifiers to Datastream and extract returns and other financial data for the period around the relevant merger announcement. We use the returns data to compute merger announcement effects for targets and acquirers in the form of cumulative average abnormal returns as detailed in Section 3.

The final key element of our dataset is the set of new merger legislation introduced in 15 European countries during the period of our sample and recorded in Carletti et al. (2015). Table 2 lists the dates of the legislation changes and the associated number of bank mergers in our sample. In most instances the legislation introduced establishes the first explicit merger control regime in the countries under consideration and brings national

[5] We identify banks by NAIC 3-digit industry code 522 corresponding to "Credit Intermediation and Related Activities". This includes savings and industrial banks but excludes investment banks, brokers and insurance companies. We truncate the sample before 2008 to avoid including transactions that stem from rescue or other mergers during the financial crisis.

legislation in line with the EU merger control regulation of 1989. In others, the legislation change modifies and strengthens an existing regime. Carletti et al. (2015) break down the new legisation into four categories concerning the assessment criteria, the enforcer of legislation, the ability for politians to overturn decisions of the regulator and notification requirement. They score all legislation changes along these four dimensions, measuring the change in strictness. Overall, all events show a positive change in the index along most dimensions, implying a relatively homogeneous tightening of merger control in each case.[6] We therefore treat all 18 legislation changes as instances of a tighter and more explicit merger control and group them accordingly.

We map the sample of bank mergers from the SDC database into our legislation events based on the country to which SDC assigns the merger target based on its country of incorporation. This mapping is likely to be imperfect as for competition policy purposes the relevant legislation is determined by the location of a company's economic activity. However, if a bank is incorporated in a given country it can be expected to have a significant share of its business in that country and thus to be affected by applicable national legislation.

For Norway, Spain and Sweden, we observe two distinct legislation changes over the sample period. As the two events in each country are several years apart (7 years for Sweden; 10 years for Norway and Spain), we treat them each as independent changes. In these countries, a given merger can thus be classified as before the legislation change with respect to one event and after the legislation change with respect to the other. As a robustness check we estimated our model on a modified sample including only the first

[6] See Carletti et al. (2015), Table 1 for details.

change in any country, thereby dropping the second legislation change in the three countries concerned and the associated mergers. Our results remain qualitatively unaffected on this smaller sample.

Summary statistics for our sample are provided in Table 3. For our main analysis we focus on the 380 transactions (mapped to legislation changes) for which we observe a sufficiently long time series of daily returns for the target bank around the merger announcement to estimate merger announcement effects starting 30 days before merger announcement.

3. Merger Announcement Effects

Significant gains in the stock prices of merger targets around the announcement of an acquisition are commonly observed in corporate takeovers (Jensen and Ruback, 1983). Becher (2000) and others document similar effects for mergers in the banking industry. The gains take the form of significantly positive cumulative abnormal returns (CARs), reported to be around 10-30 percent on average.

We compute CARs for targets and acquirers in our sample using a standard market model. We regress daily returns of a merger party r_{it} on returns for a national market index r_{mt} and a dummy for the relevant event window δ_{it}. For our main analysis we use the following specification:

$$r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i^{event} \delta_{it}^{event} + \epsilon_{it} \tag{1}$$

We estimate this model for different event window sizes parameterized by τ with $\delta_{it}^{event} = 1$ if $t \in [-\tau, 5]$ relative to the announcement date $t = 0$. The model is estimated by OLS

for each merging party using an estimation window that includes an additional 250 days before the event window (see Figure 1 for an illustration). The CAR corresponding to an individual stock i for a given event window is computed by multiplying the estimate $\hat{\gamma}_i$ with the corresponding number of days in the event window. The results for the whole sample are shown in Table 4 for acquirers and targets for a variety of event windows.

The pattern of the estimates in our data is consistent with observations from the literature: target CARs are large and positive at around 11 to 16 percent. Acquirer CARs are close to zero. Statistical tests reject the null hypothesis that the mean target CAR is equal to zero at the one percent level, whilst for acquirers the null hypothesis of no effect cannot be rejected at the five percent level for any event window size. We construct joint entity CARs as the weighted average between target and acquirer and find that these are positive but small around 1 to 2 percent.

4. Multivariate Analysis of the Impact of Merger Legislation Changes

We analyze the impact of changes in merger legislation on the characteristics of mergers in our dataset. These include properties of the transaction as a whole as well as properties of the individual firms involved.

4.1. **Specification.** For this analysis we regress a given merger characteristic on a dummy variable indicating whether the transaction was announced before or after the entry into force of the relevant legislation. We include in different specifications a variety of controls including a quadratic time trend as well as fixed effects for countries and years to control for possible selection issues based on geography and time.[7] The basic model is displayed

[7] As further robustness checks we analyze specifications including an interaction term between the legislation dummy to capture the notion that the impact of the legislation may be phased in over time. In addition, we test for the effect of other events during our sample period which might lead to a systematic

in Equation 2 where y_i is the characteristic under investigation, X_i are controls including fixed effects and δ_i^{AFTER} is the dummy capturing whether the transaction took place after the change in merger control legislation. Thus, γ represents the coefficient of interest that captures the effect of the legislation changes.

$$y_i = \alpha + \beta X_i + \gamma \delta_i^{AFTER} + \epsilon_i \tag{2}$$

The main variable we consider in this specification is the merger announcement effect on targets. This is the analysis illustrated in Figure 2. In addition, we consider merger completion rates, the size, profitability and risk profile of merging parties as well as the geographic and industry overlap between target and acquirer. Finally, we study the announcement effects of rivals to the merging parties as a proxy for the competitive impact of the mergers in our sample.

4.2. **Merger Announcement Effects on Targets.** Our key findings relate to the announcement CARs for targets. We document a statistically significant and economically meaningful increase in CARs for transactions following the introduction of merger control legislation. The increase in CARs around the announcement is estimated to be around 6-7 percentage points for the $[-30, 5]$ day interval relative to a benchmark level of 11 percent for the sample as a whole. The regression results are summarized in Table 5.

Column (1) presents a baseline regression of CARs on a dummy indicating a merger after the introduction of merger control legislation. Column (2) includes country fixed

reassessment of banking mergers. For example, we introduce a dummy variable capturing the effect of the Barings collapse in February 1995. These additions turn out to have very little explanatory power and do not affect our main results.

effects. Column (3) includes country fixed effects and a linear and quadratic time trend and shows an increase in CARs of about 5.6 percentage points. This specification offers a relatively clean estimate of the effect of the legislation as it does not add any controls that might themselves be affected by the legislation. The effect we measure is of similar size when the time trend is replaced by year fixed effects (6.5 percentage points, see Column (4)). Furthermore, our results are unaffected to the introduction of controls about the transaction such as a cross-border dummy, the deal value and the deal attitude (Columns (5), (6) and (7)). [8,9]

We find the pattern of increased announcement effects robust to changes in the size of the event window. The results are also robust to changes in the approach taken to classifying mergers as before or after the new legislation. In our main analysis, we consider a transaction to take place before the new legislation if it was announced prior to the announcement date of the legislation change. Other approaches, for example, taking the date on which the legislation was implemented to be the relevant cutoff, do not affect our results. Furthermore, the date of a merger can be measured as the date it becomes effective rather than being announced. We run our analysis under different specifications and find our results to be robust as only a very small share of transactions is affected by these variations in classification rules. Out of the 380 targets with CAR data, only 5 transactions

[8] We add other controls in robustness checks and find our results overall robust to such changes. For example, adding log acquirer size as an additional control where available whilst holding constant our sample leaves our results largely unaffected. Also, note that characteristics that are significantly affected by the change in legislation (such as acquirer size, see Section 4.3.1) tend to be unsuitable as controls.

[9] We also run specifications in which we allow for the effect of the legal change to be learned in over time. For this we interact the dummy for transactions under new legislation with the time passed since its introduction. In this approach the learning component acts similar to the time trend in other specifications and our main results are not qualitatively affected. Note that we apply a uniform time trend across all countries, effectively assuming that general trends in merger activity are shared between the European countries in our sample. We do not allow time trends to vary by country as this specification would capture the variation of the legislation change as part of the country specific time trend rather than a policy effect.

are classified differently by the choice between announcement and implementation date, be it for the change in the legislation or the merger transaction itself.

In addition, we consider the robustness of our CAR findings to the introduction of controls for sources of financing of the mergers in our sample. The corporate finance literature has established a positive relationship between cash financing and merger announcement CARs for targets (Betton et al., 2011, Section 2). SDC provides data on sources of financing that distinguish cash from equity and other financing. In our sample 145 transactions are fully cash financed whilst an additional 82 are fully equity financed. However, only 261 transactions in our sample have data on financing that is not reported as "unknown".[10] Table 6 presents the results on the impact of controlling for sources of financing using this data. Using the full sample (including those transactions with unknown funding) adding a dummy for all cash financed transactions to our list of controls (Column (2)) has the effect of marginally increasing the coefficient on the impact of the legislation relative to the benchmark (Column (1)). Adding a dummy variable for all equity financed transactions leads to a significant increase in the standard error on the legislation dummy leading to a drop in statistical significance. In the reduced sample of 261 transactions with valid financing source data, we find that the dummies on cash and equity financing are statistically significant and show the expected signs. The coefficient on the effect of the legislation remains largely unchanged and significant at the 10 per cent level even in the smaller sample. The reduced statistical significance is unsurprising given the loss of about 30 per cent of observations in our sample.

[10] We cannot distinguish from our data whether information on funding was available at the time of the merger announcement or revealed later.

4.3. **Interpretation of Increase in Target CARs.** An increase in the merger announcement CARs after the introduction of new merger control legislation can be seen to reflect a greater expectation by the markets regarding the value created by the transaction. The observation of increased target value would be consistent with both an increase in the value created by the transaction as well as the a transfer from acquirers to targets as the result of greater bidding competition. We believe our data are mostly consistent with the value creation interpretation, as we would expect a transfer to show up in a negative effect on acquirers, for which we find no evidence in our sample despite the large sample of bidder firms in our data. By contrast, even though value creation would be expected to be reflected in a positive effect on joint entity announcement effects, due to significant sample attrition when constructing combined entities, our sample arguably may lack the statistical power to uncover this effect.

There are various plausible explanations for mergers to be more valuable under the new merger control legislation, which relate to the properties of the mergers happening as well as to the economic and regulatory environment. These include:

a. Attention to risk/stability considerations, which are typically the main concern for prudential regulators, may be reduced in favor of competition concerns when merger control by the competition authority is extended to the banking industry; this may change the type of mergers that are undertaken.
b. Planned mergers may become more uncertain in terms of whether they will go through because they also need to be approved by the competition authority. Banks may therefore choose to keep the mergers much more confidential until they are sure that it will be accepted. This may imply a bigger surprise at the announcement.

c. Merger control also requires more analysis to persuade an additional authority, so that more and more precise information may reach the market. Stock prices may then increase more as a reaction to the improved information.

d. Banks can increase profits through a merger in two main ways: through an increase in market power or through efficiency gains. The latter requires more effort/screening cost (the benefit of a "quiet life"). In the absence of competition control, banks prefer to "shirk" and increase profits through increased market power. With competition control, the market power option disappears (or becomes more difficult) and it becomes worthwhile (or banks are forced) to exert effort and search for efficiency enhancing mergers.

To shed light on which of these possible and non-exclusive interpretations is more likely to be relevant, we explore the impact of the new legislation on various other characteristics of the merging parties as well as of the mergers themselves such as the market capitalization of merging parties, completion rates, bank risk profiles and proxies for competitive effect such as rival response and market overlap of the merging parties.

4.3.1. *Market Capitalization of Merging Parties.* Merger control legislation is aimed at limiting anticompetitive mergers. The size of parties involved offers a useful indicator of whether a transaction is anticompetitive. We study the implications of legislation changes for the size of firms involved using the market capitalization of merging parties. For our analysis we use the logarithm of market capitalization 30 days before the merger announcement and study the impact of new legislation on the absolute as well as relative size of parties.

We find that the acquirers are significantly smaller with new legislation (Table 7 shows a decrease of about 50 percent) than in its absence, whilst targets remain unaffected (Table 8). This change in the relative position of targets and acquirers is confirmed when we study as dependent variable the log ratio of acquirer over target: Table 9 suggests a decline of about 45 percent in this ratio.[11] Note that our estimates are conditional on fixed effects and trends. Indeed, the unconditional effect suggests an increase in acquirer size over time. Our results thus should be interpreted as legislation changes slowing down what would otherwise be a substantial increase in acquirer size.

4.3.2. *Merger Completion Rate.* The stock market response on announcement of a merger can be understood as the market's joint expectation of the value created by the transaction and its likelihood of completion. As the likelihood of completion changes, the valuation effect should adapt, a point made recently in Giglio and Shue (2014). The increase in target CARs we observe as a consequence of legislation changes could thus be connected to a greater likelihood that a transaction is completed. We thus analyze the consummation probability, that is the probability that an announced merger is completed, in our sample and whether this is changing under the new legislation in merger control.

We find that in our sample on average the consummation probability increases from 72.4 percent for transactions before legislation changes to 78.4 percent after the legislation changes. However, the difference is not statistically different from zero. This result is confirmed in our regression with fixed effects and controls (see Table 10).

4.3.3. *Profitability and Risk.* The increase in CARs we observe after the introduction of new legislation may be related to the selection of targets for acquisition as well as of the

[11] We take the logarithm of the size variables because of the fat upper tail of the size distribution. As a robustness check we run the specifications also in levels. This leaves the qualitative results unchanged.

acquirers themselves. We test for the statistical impact of the new legislation using the same specification as for the CARs. As dependent variables we employ here a set of profitability measures including return on assets (ROA) and return on invested capital (ROIC) from Worldscope. In addition, we study a set of risk ratios from Worldscope including the ratio of capital to total assets (Cap/Assets), total debt to equity (Debt/Equity) and total debt to capital (Debt/Cap). Finally, as an additional measure of bank risk in particular we construct z-scores that measure the distance from bankruptcy (Roy, 1952).[12] We take all these measures for merging parties one year prior to the announcement of the transaction.[13]

For acquirers we do not find systematic changes in profitability or risk profile prior to a merger. Only one specification for risk variables shows a statistically significant effect in Tables 11, 12 and 13, but this is not robust in other specifications or supported by equivalent patterns in other variables.

For targets we find weak evidence for selection by profitability or risk profile. The results are collected in Tables 14, 15 and 16. The data suggest that targets have a pre-merger ROA that is slightly higher after the new change in legislation, although this effect is not robust to the introduction of year fixed effects. In addition, there is no comparable effect for ROIC with no specification showing a significant effect of the legislation and point estimates turning negative. For risk measures we find only very weak evidence at the 10 percent significant level for targets to be slightly better capitalized after the legislation in terms of z-score and capital/asset ratios. Again the effect is not robust to year fixed effects and is not consistent across the other two risk measures we employ.

[12] The z-score measure was introduced by Roy (1952) and employed e.g. in Laeven and Levine (2009) and Houston et al. (2010). We follow the latter two studies in computing z-scores from our data.

[13] We repeat as robustness checks the analysis with data from two years before the announcement and relative to implementation dates. An analysis of post-merger measures of risk and profitability did not yield any additional insights.

4.3.4. *Merger Effect on Rivals.* The higher CARs we observe for mergers under new legislation can be interpreted as capturing an expectation of more profitable mergers, which may be for pro-competitive (efficiency) or anti-competitive (market power) reasons. We study the relevance of these two channels in our data by considering the stock price response of rivals to the merging parties and the geographic and industry overlap of the merging parties.

Standard models of oligopoly predict that whether a merger is pro- or anti-competitive affects the direction of its impact on the rivals of the mering parties: a merger which makes the merging parties more competitive, e.g. through greater efficiency from synergies, has a harmful effect on rival firms in the same market, whereas a merger which primarily increases concentration and market power in the industry has a positive effect on rivals. As a consequence, as first argued by Eckbo (1985) and now widely used in the literature on assessing the competitive effects of mergers,[14] the stock market response of such rival firms to the announcement of a merger may give an indication of its competitive effect.

We conduct an analysis of rival market responses that mirrors that of our main CAR analysis for targets and acquirers. Equity data are collected from Datastream which also provides the sector lists of firms in the banking sectors. As rivals for any given transaction we consider other banks within the sector list of the same country as the merger target. Whilst this group of national rivals may not represent the relevant competitors for antitrust purposes for any given merger transaction, we think it offers a valid proxy for an analysis across many transactions given that banking markets in many countries have in the past

[14] See e.g. Duso et al. (2007) and Duso et al. (2013) who employ the same approach in an assessment of EU merger control policy. Note, however, that the classic interpretation of the sign of rivals' stock price reaction has recently also been questioned by Fridolfsson and Stennek (2010) on the ground that it does not take properly into account the market's anticipation that a merger would take place.

been defined as national in geographic size.[15] For each listed bank stock we then collect equity data on prices and market capitalization for the entire merger sample period (Jan 1985 to Dec 2008) and compute CARs for the $[-30, 5]$ day window for all those bank stocks within the same country as the target bank of the merger. Finally, for each merger we compute a single market capitalization-weighted average rival CAR that presents an estimate of the effect of the transaction on rival profits and thus market competition.

Table 17 presents a simple univariate analysis of these rival CARs across transactions. The first row shows that on average across the full sample of mergers rival CARs tend to be small and negative at -0.445 percent, suggesting that on average the transactions in our sample have a neutral or slightly pro-competitive effect. Splitting transactions by whether they took place before or after the introduction of new legislation suggests that the pro-competitive tendency derives from those mergers that took place under the new environment (Columns (2) and (3)). However, a two-sided t-test suggests that the data cannot reject the null hypothesis that rival responses remain unchanged by the introduction of the law (Column (4)). The second row in Table 17 presents an analysis of the proportion of pro-competitive transactions, where we have classified as pro-competitive transactions with a negative weighted average rival CAR. The data suggest that slightly more than half of all transactions (54.1 percent) are pro-competitive, with no statistically significant change in that proportion across the legislation regimes we study.

Our conclusion is further confirmed by the results of the regression analysis presented in Table 18. The specifications shown mirror those of our target CAR analysis in Section 4 and include country and year fixed effects. The point estimates on the legislation

[15] See for example the decision of the European Commission in the merger case Case No COMP/M.4844 - FORTIS / ABN AMRO ASSETS where it found geographic markets that were national in scope in many product areas including corporate banking and private individual retail banking.

dummy suggest that the average rival CARs of transactions declined somewhat with the introduction of the new merger control legislation, suggesting a mild pro-competitive effect, but the coefficient is not statistically significant.

Note that the negative coefficient estimate should not be read as suggesting that the mergers in our sample are welfare reducing. First, our estimate is very close to zero economically and only statistically significant at the 10 percent level. Second, the rival stock market response reflects the market's expectation of future cash flows and thus profitability. This leaves out any potential positive effect on consumers. Indeed, one feature of a competitive market is a low level of market power and thus profit relative to consumer surplus.

These findings are robust to changes to our sample, including a focus on those transactions that might be most likely to raise competition concerns, namely mergers between banks in the same country and in settings where the merging parties control a large share of the total assets recorded by all banks in our sample.

4.3.5. *Geographic and Industry Overlap.* Our final analysis concerns the extent to which targets and acquirers overlap in terms of geography and economic activity. Both types of overlap are suggestive of market power. Thus, we expect that after the strengthening of merger control firms choose to pursue transactions with a lower level of overlap than before.

We study geographic overlap by considering the probability that a transaction involves firms from different countries. As before, we note that whilst the national level is not necessarily the correct geographic market definition for antitrust purposes for every transaction, antitrust authorities in several of the countries we consider have indeed

used it in this function. Results in Table 19 suggest no systematic change in the share of cross-border transactions after the introduction of the new legislation.[16]

For industry overlap we consider the probability of a transaction involving two banks, defined according to 3-digit NAIC code 522 associated with credit intermediation. Thus we distinguish between transactions where the target banks in our sample are acquired by another bank from those where the acquirer is not a bank. Again, this distinction can only act as proxy as it may not necessarily be the appropriate antitrust dimension in every case. The results in Table 20 suggest that the share of bank acquisitions by other banks decreased by around 10-12 percent after the introduction of the legislation. This result is consistent with the interpretation that mergers become more competitive after the strengthening of merger control in terms of lower product market overlap.[17]

In summary, our analysis of rival CARs and overlap statistics of mergers in our sample provides some evidence to support the argument that the new merger control legislation has had a pro-competitive effect on bank mergers, reflected in a decrease in industry overlap.

5. Conclusion

We study the impact of merger control as implemented by competition authorities on bank mergers. To this aim, we exploit a wave of legislation changes introduced in Europe between 1989 and 2004 that extends merger control to the banking industry. We find that the introduction of merger control by competition authorities increases the

[16] The vast majority of acquirers in our sample of mergers involving banks in Europe, be they crossborder or not, are located in Europe themselves.

[17] Non-bank acquirers are mostly in the sectors of securities and investment (NAIC 523), insurance (NAIC 524) and funds and trusts (NAIC 525). We also analyze overlaps at lower industry code levels. However, this does not reveal any additional insights.

abnormal returns of bank mergers' targets in the days around the merger announcement by about 7 percentage points. To distinguish between several and non-exclusive potential explanations for this effect, we study the effects of these legislative changes on other characteristics of bank mergers.

We find some (weak) evidence that the pre-merger profitability of target banks increased, and more robust evidence of (a) a decrease in the size of acquirers, in absolute terms and relative to the size of the target, and (b) a decrease in the share of transactions in which banks are acquired by other banks. Other merger characteristics, including the size and risk profile of targets, the stock market response of rivals and the geographic overlap of merging parties, appear unaffected. Findings (a) and (b), together with our analysis of rival CARs above are consistent with a pro-competitive effect of new merger control legislation in the banking industry. In the absence of competition control, banks – and their national regulators – may have preferred more anti-competitive mergers, for example to support national champions or for reasons of "economic nationalism" as described in Dinc and Erel (2013) and Aktas et al. (2004). In particular, large, dominant banks acquiring much smaller rivals may have been a common pattern. With new competition control laws this option may have disappeared or may have become more difficult, leaving more room for more efficiency-enhancing acquisitions by smaller banks and by non-bank firms entering the banking market.

FIGURE 1. Illustration of CAR $[-30, 5]$ Estimation

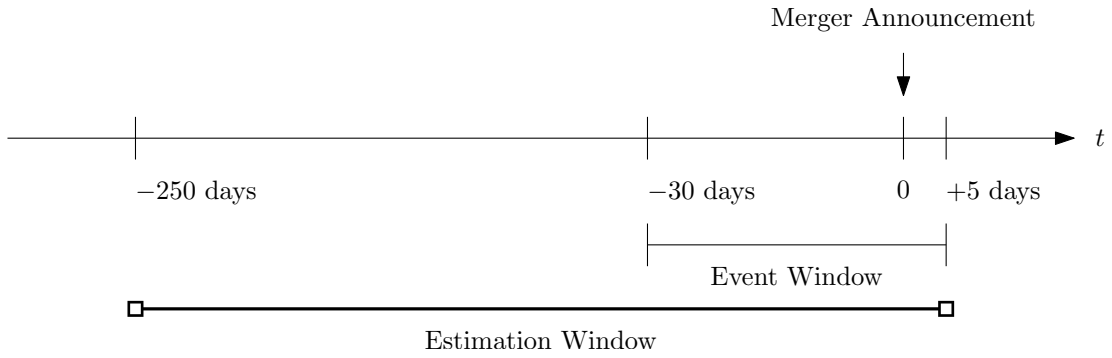

FIGURE 2. Illustration of Legislation Impact

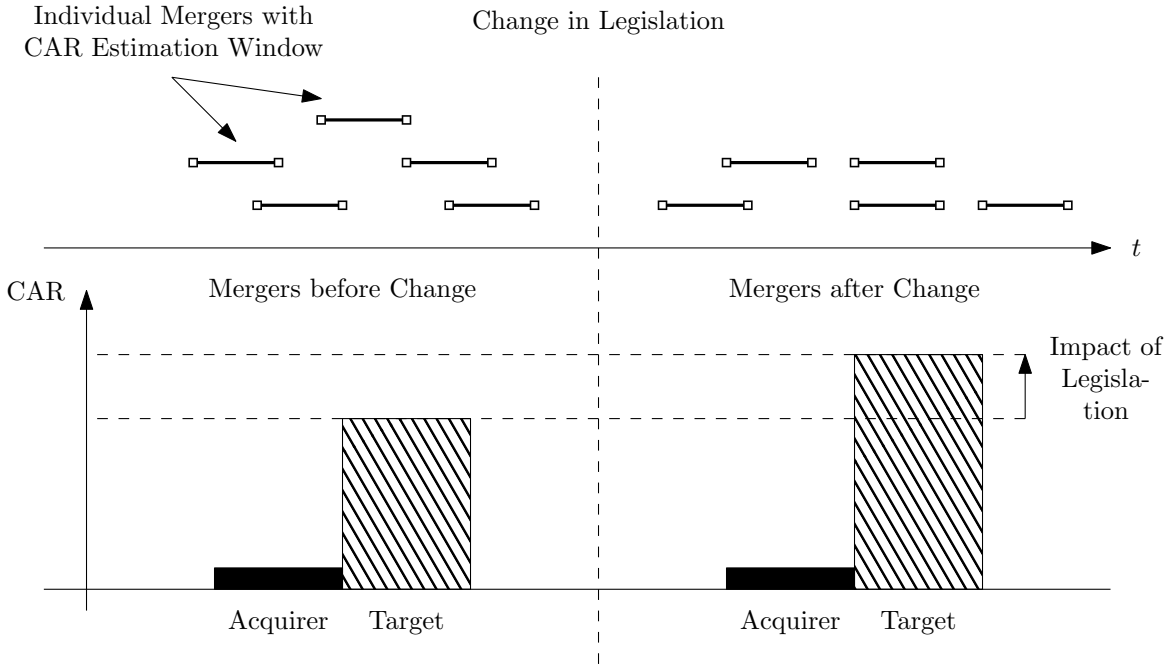

TABLE 1. Overview of Data Sources

Data Source	Variables	Definition / Notes
SDC Platinum M&A	Announcement date	Date of announcement of merger
	Crossborder	Indicates acquirer in different country from target
	Friendly	Offer not a hostile approach
	Rumor	Existence of rumors prior to transaction announcement
	Deal Value	Valuation of transaction
	All Cash	Fully cash financed
	All Equity	Fully equity financed
Datastream	Returns	For target, acquirer and other banks in target country
	Market Capitalization	Measured 30 days before merger announcement
Worldscope	Return on Assets	Year before merger announcement
	Return on Invested Capital	Year before merger announcement
	Capital / Asset Ratio	Year before merger announcement
	Debt / Equity Ratio	Year before merger announcement
	Debt / Capital Ratio	Year before merger announcement
Carletti et al. (2015)	Legislation changes	Announcement and implementation dates of changes in merger control legislation

Notes: Worldscope data retrieved via Datastream.

TABLE 2. Legislation Events

Country	Announcement Date	Associated Mergers
Austria	Jan 1, 1993	5
Belgium	Aug 5, 1991	12
Denmark	May 26, 2000	11
Finland	Apr 30, 1998	0
France	Aug 1, 2003	56
Greece	Mar 8, 1991	17
Ireland	Apr 10, 2002	4
Italy	Oct 10, 1990	72
Netherlands	Jan 1, 2000	6
Norway	Jun 9, 1993	23
Norway	Mar 2, 2004	23
Portugal	Apr 10, 2003	29
Spain	Jul 17, 1989	22
Spain	Apr 16, 1999	22
Sweden	Dec 17, 1992	14
Sweden	Apr 1, 2000	14
Switzerland	Oct 6, 1995	4
UK	Nov 5, 2002	46

Source: Carletti et al. (2015)

TABLE 3. Summary statistics

Variable	Unit	Obs	Mean	Std Dev	Min	Max
After the Change in Legislation	0 / 1	380	.524	.5	0	1
Cross-border	0 / 1	380	.279	.449	0	1
Friendly	0 / 1	380	.887	.317	0	1
Rumor Before Announcement	0 / 1	380	.068	.253	0	1
All Cash Financed	0 / 1	380	.382	.486	0	1
All Equity Financed	0 / 1	380	.216	.412	0	1
Within Industry	0 / 1	380	.732	.444	0	1
Consummated Merger	0 / 1	380	.755	.43	0	1
Deal Value	million USD	380	2,312.828	7,955.318	5.123	98,189.19
Log Deal Value	log million USD	380	5.793	2.024	1.634	11.495
Market Capitalization						
Acquirer	log million USD	224	8.168	1.815	2.466	12.52
Target	log million USD	367	6.083	1.981	-.693	11.345
Joint Entity	log million USD	216	8.517	1.724	3.06	12.528
Ratio Acquirer over Target	—	216	1.778	1.757	-4.457	6.868
Acquirer Financials						
Return on Assets	—	193	.019	.029	-.027	.326
Return on Invested Capital	—	212	.043	.043	-.033	.41
Log z-Score	—	181	3.663	.977	-.711	6.401
Capital / Asset Ratio	—	204	.197	.152	-.259	.912
Debt / Equity Ratio	—	221	9.218	8.672	-4.635	45.308
Debt / Capital Ratio	—	221	.779	.239	-1.116	.974
Target Financials						
Return on Assets	—	250	.015	.034	-.193	.149
Return on Invested Capital	—	273	.031	.082	-.452	.804
Log z-Score	—	142	3.81	1.295	.751	8.428
Capital / Asset Ratio	—	253	.282	.257	.008	.972
Debt / Equity Ratio	—	276	9.271	18.713	-123.016	131.452
Debt / Capital Ratio	—	275	.756	.252	0	1.052

TABLE 4. Mean Announcement CARs by Role (Full Sample)

	(1) Acquirers	(2) Targets	(3) Joint Entity
CAR [-5, 5]	-0.0000939	0.112***	0.0137***
	(0.973)	(0.000)	(0.008)
CAR [-10, 5]	-0.00106	0.118***	0.0163***
	(0.737)	(0.000)	(0.005)
CAR [-20, 5]	-0.00121	0.122***	0.0148**
	(0.745)	(0.000)	(0.024)
CAR [-30, 5]	-0.00374	0.129***	0.00934
	(0.386)	(0.000)	(0.191)
CAR [-50, 5]	-0.00434	0.160***	0.0172*
	(0.448)	(0.000)	(0.078)
Observations	600	380	205

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 5. Effect of Change in Legislation on Target CARs ($[-30, 5]$ Window)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After the Change in Legislation	-0.0156	0.0184	0.0556**	0.0649**	0.0141	0.0611**	0.0728**
	(0.605)	(0.557)	(0.044)	(0.047)	(0.651)	(0.033)	(0.029)
Cross-border					0.0296	0.0435	0.0422
					(0.574)	(0.416)	(0.440)
Friendly					0.0171	0.00575	-0.0164
					(0.689)	(0.879)	(0.624)
Rumor Before Announcement					0.00124	0.0295	0.0374
					(0.988)	(0.723)	(0.608)
Log Deal Value					0.00304	0.00595	0.00803
					(0.653)	(0.397)	(0.355)
Constant	0.137***						
	(0.000)						
Obs	380	380	380	380	380	380	380
Adj R-squared	-0.00193	0.192	0.200	0.183	0.185	0.195	0.179
Fixed effects	None	Country	Country	Country / Year	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 6. Sources of Funding as Additional Controls

	Full Sample			Subsample with Valid Funding Data	
	(1)	(2)	(3)	(4)	(5)
After the Change in Legislation	0.0728**	0.0749**	0.0578*	0.0842*	0.0740*
	(0.029)	(0.028)	(0.085)	(0.055)	(0.100)
All Cash Financed		0.0276		0.127**	
		(0.415)		(0.015)	
All Equity Financed			-0.181***		-0.158***
			(0.000)		(0.001)
Cross-border	0.0422	0.0349	0.000420	-0.0591	-0.0644
	(0.440)	(0.515)	(0.993)	(0.197)	(0.131)
Friendly	-0.0164	-0.0140	0.0146	-0.000401	0.00944
	(0.624)	(0.674)	(0.720)	(0.993)	(0.816)
Rumor Before Announcement	0.0374	0.0403	0.0496	0.127**	0.120**
	(0.608)	(0.580)	(0.319)	(0.043)	(0.044)
Log Deal Value	0.00803	0.00915	0.0169**	-0.00395	-0.00873
	(0.355)	(0.265)	(0.029)	(0.706)	(0.316)
Obs	380	380	380	261	261
Adj R-squared	0.179	0.178	0.221	0.241	0.263
Fixed effects	Country / Year	Country / Year	Country / Year	Country / Year	Country / Year
Linear and Quadratic Trend	No	No	No	No	No
Clustered SE	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 7. Effect of Change in Legislation on Acquirer Market Capitalization (log)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After the Change in Legislation	0.560**	0.200	-0.684**	-0.610**	-0.0989	-0.462**	-0.425*
	(0.023)	(0.318)	(0.015)	(0.048)	(0.490)	(0.027)	(0.058)
Cross-border					1.338***	1.227***	1.476***
					(0.000)	(0.002)	(0.000)
Friendly					0.180	0.0740	-0.275
					(0.652)	(0.850)	(0.436)
Rumor Before Announcement					0.761	0.510	0.411
					(0.124)	(0.204)	(0.308)
Log Deal Value					0.382***	0.353***	0.367***
					(0.000)	(0.000)	(0.000)
Constant	7.838***						
	(0.000)						
Obs	224	224	224	224	224	224	224
Adj R-squared	0.0188	0.958	0.963	0.963	0.971	0.972	0.973
Fixed effects	None	Country	Country	Country / Year	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 8. Effect of Change in Legislation on Target Market Capitalization (log)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After the Change in Legislation	1.283***	0.729***	-0.175	-0.243	0.295**	-0.0364	-0.139
	(0.000)	(0.002)	(0.314)	(0.197)	(0.035)	(0.711)	(0.185)
Cross-border					-0.0182	-0.125	-0.186
					(0.927)	(0.552)	(0.345)
Friendly					0.0905	0.113	0.141
					(0.275)	(0.227)	(0.219)
Rumor Before Announcement					0.309	0.128	0.0545
					(0.177)	(0.463)	(0.758)
Log Deal Value					0.737***	0.715***	0.710***
					(0.000)	(0.000)	(0.000)
Constant	5.412***						
	(0.000)						
Obs	367	367	367	367	367	367	367
Adj R-squared	0.102	0.918	0.925	0.930	0.970	0.971	0.972
Fixed effects	None	Country	Country	Country / Year	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 9. Effect of Change in Legislation on Ratio of Acquirer and Target Market Capitalization (log)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After the Change in Legislation	-0.819***	-0.539***	-0.465**	-0.450*	-0.579***	-0.517**	-0.415*
	(0.001)	(0.002)	(0.030)	(0.076)	(0.002)	(0.023)	(0.074)
Cross-border					1.527***	1.646***	1.960***
					(0.000)	(0.000)	(0.000)
Friendly					-0.0373	-0.143	-0.462
					(0.915)	(0.674)	(0.136)
Rumor Before Announcement					0.567	0.605	0.801*
					(0.249)	(0.146)	(0.086)
Log Deal Value					-0.325***	-0.323***	-0.328***
					(0.000)	(0.000)	(0.000)
Constant	2.256***						
	(0.000)						
Obs	216	216	216	216	216	216	216
Adj R-squared	0.0487	0.525	0.523	0.523	0.649	0.654	0.661
Fixed effects	None	Country	Country	Country / Year	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 10. Effect of Change in Legislation on Probability of Merger Consummation (linear model)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After the Change in Legislation	0.0602	0.0250	-0.0368	-0.0259	0.0168	-0.0369	-0.0329
	(0.174)	(0.489)	(0.476)	(0.591)	(0.727)	(0.463)	(0.512)
Cross-border					0.146***	0.129**	0.129**
					(0.005)	(0.013)	(0.010)
Friendly					0.358***	0.353***	0.325***
					(0.002)	(0.002)	(0.005)
Rumor Before Announcement					0.0245	0.00185	-0.0144
					(0.789)	(0.983)	(0.864)
Log Deal Value					-0.00251	-0.00626	0.00199
					(0.853)	(0.666)	(0.899)
Constant	0.724***						
	(0.000)						
Obs	380	380	380	380	380	380	380
Adj R-squared	0.00225	0.757	0.759	0.760	0.777	0.777	0.774
Fixed effects	None	Country	Country	Country / Year	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 11. Effect of Change in Legislation on Acquirer Pre-Merger Profitability

	Return on Assets				Return on Invested Capital			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After the Change in Legislation	-0.00171	0.000366	0.00188	-0.00184	-0.00368	0.00264	0.00352	0.00177
	(0.520)	(0.878)	(0.537)	(0.217)	(0.390)	(0.382)	(0.300)	(0.627)
Constant	0.0186***	0.0110***	0.0316***	0.0566***	0.0420***	0.0159***	0.0424**	0.0656***
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.022)	(0.000)
Obs	188	188	188	188	205	205	205	205
Adj R-squared	-0.00313	0.283	0.306	0.568	-0.00126	0.264	0.275	0.290
Fixed effects	None	Country	Country	Country / Year	None	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	No	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 12. Effect of Change in Legislation on Acquirer Pre-Merger Risk Position

	log z-score				Capital / Assets			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After the Change in Legislation	0.0499	0.00114	-0.0694	0.0358	0.0445**	0.0493**	0.0198	-0.00409
	(0.710)	(0.992)	(0.655)	(0.839)	(0.015)	(0.012)	(0.295)	(0.786)
Constant	3.642***	4.043***	2.523***	1.920***	0.162***	0.236***	0.301***	0.435***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	177	177	177	177	197	197	197	197
Adj R-squared	-0.00492	0.219	0.270	0.398	0.0250	0.309	0.376	0.599
Fixed effects	None	Country	Country	Country / Year	None	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	No	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 13. Effect of Change in Legislation on Acquirer Pre-Merger Leverage

	Debt / Equity				Debt / Capital			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After the Change in Legislation	-0.932	-1.364	-0.945	-0.458	0.0323	-0.0180	-0.0577**	-0.0271
	(0.388)	(0.373)	(0.504)	(0.685)	(0.224)	(0.529)	(0.029)	(0.159)
Constant	9.468***	20.49***	23.76**	8.960**	0.772***	0.942***	0.749***	0.464***
	(0.000)	(0.000)	(0.039)	(0.032)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	215	215	215	215	214	214	214	214
Adj R-squared	-0.00118	0.175	0.170	0.239	0.00229	0.232	0.260	0.398
Fixed effects	None	Country	Country	Country / Year	None	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	No	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 14. Effect of Change in Legislation on Target Pre-Merger Profitability

	Return on Assets				Return on Invested Capital			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After the Change in Legislation	-0.00627**	0.00486*	0.00411**	0.00266	-0.0143***	-0.00149	-0.000370	-0.000887
	(0.040)	(0.052)	(0.045)	(0.134)	(0.006)	(0.589)	(0.948)	(0.803)
Constant	0.0205***	0.0105***	0.00727	-0.0158***	0.0425***	0.0230***	0.0694**	0.0370***
	(0.000)	(0.000)	(0.528)	(0.002)	(0.000)	(0.000)	(0.016)	(0.000)
Obs	239	239	239	239	262	262	262	262
Adj R-squared	0.0135	0.156	0.150	0.196	0.0249	0.0957	0.121	0.201
Fixed effects	None	Country	Country	Country / Year	None	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	No	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 15. Effect of Change in Legislation on Target Pre-Merger Risk Position

	log z-score				Capital / Assets			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After the Change in Legislation	0.257	0.689***	0.176	0.196*	0.0220	0.0995***	0.0535*	0.0361
	(0.214)	(0.000)	(0.204)	(0.061)	(0.504)	(0.004)	(0.057)	(0.170)
Constant	3.626***	4.346***	4.091***	5.033***	0.263***	0.451***	0.286**	0.0950**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.021)	(0.017)
Obs	138	138	138	138	247	247	247	247
Adj R-squared	0.00408	0.224	0.307	0.331	-0.00225	0.152	0.169	0.192
Fixed effects	None	Country	Country	Country / Year	None	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	No	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 16. Effect of Change in Legislation on Target Pre-Merger Leverage

	Debt / Equity				Debt / Capital			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After the Change in Legislation	0.520	1.619*	0.909	0.407	0.0280	0.0164	-0.00190	-0.00652
	(0.697)	(0.063)	(0.551)	(0.750)	(0.313)	(0.631)	(0.943)	(0.738)
Constant	8.298***	18.07***	10.42**	6.807***	0.761***	0.898***	0.737***	0.704***
	(0.000)	(0.000)	(0.014)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	263	263	263	263	266	266	266	266
Adj R-squared	-0.00325	0.111	0.118	0.139	0.0000901	0.0433	0.0494	0.0997
Fixed effects	None	Country	Country	Country / Year	None	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	No	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 17. Rival CARs – Simple Means

	Full Sample	By Legislation Change		
	(1)	(2) Before	(3) After	(4) Difference
Weighted Mean Rival CAR [-30, 5]	-0.00445*	-0.00169	-0.00698*	0.00529
	(0.094)	(0.660)	(0.059)	(0.320)
Procompetitive Mergers (%)	0.541***	0.541***	0.540***	0.00103
	(0.000)	(0.000)	(0.000)	(0.984)
Observations	379	181	198	379

p-values in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 18. Effect of Legislation Change on Value Weighted Mean Rival CARs

	(1)	(2)
After the Change in Legislation	-0.00423	-0.00335
	(0.173)	(0.309)
Cross-border		0.00980
		(0.271)
Friendly		0.00691
		(0.355)
Rumor Before Announcement		0.00444
		(0.564)
Log Deal Value		0.00107
		(0.443)
Obs	379	379
Adj R-squared	0.0556	0.0529
Fixed effects	Country / Year	Country / Year
Linear and Quadratic Trend	No	No
Clustered SE	Yes	Yes

p-values in parentheses
Standard errors clustered at the level of country and before / after the change in legislation.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 19. Effect of Change in Legislation on Probability of Cross-Border Transaction (linear model)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After the Change in Legislation	0.0157	0.0937	-0.0369	-0.0576	0.107	-0.0518	-0.0702
	(0.734)	(0.144)	(0.601)	(0.460)	(0.104)	(0.448)	(0.351)
Friendly					-0.0713	-0.0692	-0.0477
					(0.409)	(0.396)	(0.489)
Rumor Before Announcement					-0.0213	-0.0920	-0.0896
					(0.835)	(0.394)	(0.354)
Log Deal Value					-0.0251**	-0.0343**	-0.0387***
					(0.047)	(0.010)	(0.003)
Constant	0.271***						
	(0.000)						
Obs	380	380	380	380	380	380	380
Adj R-squared	-0.00234	0.335	0.352	0.375	0.339	0.366	0.391
Fixed effects	None	Country	Country	Country / Year	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

TABLE 20. Effect of Change in Legislation on Probability of Within Industry Merger (linear model)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
After the Change in Legislation	0.0466	-0.0764*	-0.122**	-0.102*	-0.0955*	-0.123**	-0.0976*
	(0.307)	(0.071)	(0.021)	(0.051)	(0.052)	(0.021)	(0.056)
Cross-border					-0.0134	-0.0219	-0.00516
					(0.824)	(0.758)	(0.940)
Friendly					0.101	0.0940	0.0589
					(0.184)	(0.185)	(0.470)
Rumor Before Announcement					-0.0707	-0.0795	-0.00249
					(0.378)	(0.320)	(0.971)
Log Deal Value					0.0400***	0.0380***	0.0476***
					(0.001)	(0.003)	(0.001)
Constant	0.707***						
	(0.000)						
Obs	380	380	380	380	380	380	380
Adj R-squared	0.000119	0.775	0.776	0.781	0.781	0.781	0.789
Fixed effects	None	Country	Country	Country / Year	Country	Country	Country / Year
Linear and Quadratic Trend	No	No	Yes	No	No	Yes	No
Clustered SE	No	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses

Standard errors clustered at the level of country and before / after the change in legislation.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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